

but was raised by the fervour and admiration of Domenico Cirillo, the Neapolitan friend and correspondent of Linné, to whom the latter had dedicated the heathers of the genus *Cyrilla*, now included in the family of the *Cyrtillæ*.

The Cirillo had been for long a family of doctors, naturalists, and artists. It is said that Domenico Cirillo, who was born in 1739, and graduated in 1759, was the twentieth doctor of medicine belonging to the Cirillo family. At the beginning of the eighteenth century, Nicola Cirillo, who in 1718 became a Fellow of the Royal Society of London, formed in his own private grounds in Naples a botanical garden which continued to be the scientific centre of Neapolitan naturalists until its destruction and the dispersion of the collections and herbarium in the fatal year 1799. In the sack of Cirillo's house were lost the letters written by Isaac Newton to Nicola Cirillo, and the famous herbarium of Ferrante Imperato, preserved since the sixteenth century, before which Martyn Vahl, Linné's friend and disciple, had knelt in admiration when he visited Naples in 1783.

The garden of Cirillo was the rallying point for the flower of Neapolitan thought and science, soon to be decimated and dispersed by royalist persecution during the storms of the Revolution of 1799. Many of the most distinguished men of Naples must have stood round Cirillo when the following inscription was raised in honour of Linnæus:—

CAROLI LINNAEI
Animam sapientissimam
Terris divinitus impertitam
ut
Naturae universae arcana
Declararet patefaceret
Illustraret
Postea
per dephlogisticatam
Aetheream regionem
Obvolitantem
Ne quid respub. Botanicorum
Detrimenti capiat
Vos
Fragrantissimae, saporiferae
Tetrae, spirantes
Ambrosiaca, Aphrodisiaca
Perennis voluptatis ministrae,
Herbae, Arborea, Plantae
Odoribus, Effluviis, aromate
Sistite, involvite, detinete.

The mob destroyed this inscription, together with Cirillo's house and collections, and Cirillo, with many of the noblest thinkers and benefactors of his country, was hanged in the market-place of Naples on October 29, 1799.

The inscription by Domenico Cirillo is one of the first memorials erected in a botanical garden to the memory of Carl Linné. Perhaps it may be raised again in Naples, a memorial not only of Linné's glory and of Cirillo's devotion, but also of that brotherhood of science to which Linné and the societies that bear his name have so much contributed.

ITALO GIGLIOLI.

DR. ALEXANDER BUCHAN, F.R.S.

WITH the death of Dr. Alexander Buchan on Monday, May 13, after a brief illness, a long industrious life and a distinguished scientific career were brought to a close; a genial and striking personality has become a memory.

Born at Minneshood, Kinross-shire, in 1829, educated at the Free Church Normal School and the

University of Edinburgh, he became a schoolmaster at Banchory, Blackford, and subsequently at Dunkeld. He had, at the same time, an independent taste for field botany and meteorology.

An affection of the throat proved to be an embarrassment in his scholastic work, and in 1860 he was called to Edinburgh to be secretary of the Scottish Meteorological Society. It was a time of remarkable activity; indeed, it was a notable period in the development of the modern science of meteorology. In Paris, Leverrier had traced the progress across Europe of the celebrated Crimean storm. In London, FitzRoy was busy with the daily comparison of reports by electric telegraph from a number of stations in the British Isles. The British Association was maintaining a physical observatory at Kew, in the superintendence of which Balfour Stewart had just succeeded Welsh, a pioneer in meteorological ballooning. In this enterprise Welsh was soon followed by the intrepid Glaisher, under the auspices of a British Association Committee, with the active support of Lord Wrottesley. The Master of Trinity included the design of an anemograph among his achievements. In Scotland, Thomas Stevenson, Milne Home, and Sir Arthur Mitchell, with the support of the great Scottish physicists, formed the nucleus of the energetic society which, under Buchan's management, became one of the most important centres of meteorological investigation, the focus for the collection of observations from all parts of Scotland, and the controlling body for a network of volunteer stations. The work of examination and tabulation, conducted almost wholly by Buchan and his niece, Miss Jessie Hill Buchan, received official recognition as supplying many of the summaries of observations at stations of the second order in Scotland required by the Meteorological Office in London for international purposes, and as preparing the meteorological reports for the Registrar-General for Scotland on lines somewhat similar to, but not identical with, those prepared for the Registrar-General for England and Wales by James Glaisher, first as a member of the staff of the Royal Observatory, and subsequently on his own account.

A few words as to Buchan's scientific work must suffice. With Baxendell, of Manchester, he was largely instrumental in securing the general acceptance of Buys Ballot's principle of the relation of wind to air pressure. He had the faculty of statistical insight, and realised that by the appropriate combination of many observations it was possible to trace the interdependence of phenomena which might be affected separately by a number of independent causes. This insight is illustrated in a remarkable way by his papers with Sir Arthur Mitchell upon the relations of climate and health in London. Such a method of investigation does not always commend itself to the student of physics, who, fortunate in having the conditions under his own control, is accustomed to trace the direct connection between cause and effect in each separate experiment. But the remarkable results of Buchan's work, which still remain to be followed up, enable one to understand the enthusiasm for collecting observations, and more observations, that seem purposeless to some of those who look on.

His "Handy Book of Meteorology," published in 1867, followed by a second edition in 1868, and now long since out of print, though a new edition has always been looked for, and his "Introductory Text-book of Meteorology" (1871) are ample evidence of his general grasp of meteorological work, but his favourite method of meteorological investigation was the map. Beginning from the time when the reduction of the barometer to sea-level for synchronous

charts and the identification of closed isobars as cyclonic and anticyclonic areas were novelties, he was the first to trace the course of a "depression" across the Atlantic; and subsequently, by the collection and discussion of data from all parts of the world, to give in a paper before the Royal Society of Edinburgh "the mean pressure of the atmosphere and the prevailing winds over the globe."

This was followed by the monthly charts and tables representing the atmospheric circulation in the volume contributed to the *Challenger* Reports and published in 1889, and the corresponding results for "oceanic circulation" in 1895.

His monthly maps of forty-year averages for the British Isles developed likewise (with the assistance of Dr. A. J. Herbertson) into the compilation of the wonderful atlas of pictorial meteorology published by Bartholomew in 1899. Therein is, indeed, a worthy representation of Buchan's meteorological method.

It was by the method of the map that he proposed to deal with the outstanding results of the Ben Nevis observations, which were collected largely under his own supervision, and have been already the subject of numerous papers. His capacity for dealing in this way with huge masses of figures was amazing. I have often gone with him over the details of daily maps exhibiting the results for Scottish weather at official stations, lighthouses, and private stations to trace some generalisation which had been suggested by his work. His programme was to correlate these daily maps with the observations at the summit and base of the mountain. The methodical care in ordering the entries, and their arrangement as regards colour or design to bring out any salient features, were thoroughly characteristic of his work.

From 1877 until last year, when it was arranged that he should continue the work upon the Ben Nevis observations instead, he was inspector of Scottish stations for the Meteorological Office. Throughout Scotland he succeeded in eliciting from the observers an enthusiasm for accurate work that is truly remarkable. Last year I followed myself the course of his rounds, and was interested to verify the eulogistic phrases about the Scottish stations which used to be characteristic of the reports of the annual visitation.

In 1887, Buchan succeeded Stokes as a member of the Meteorological Council. Sir R. Strachey, Sir W. Wharton, Sir G. H. Darwin, Mr. Galton, Mr. E. J. Stone, and subsequently myself, were his colleagues.

The period of his tenure almost synchronises with that of the final form of the work on Ben Nevis, which was brought into full activity by the endowment by the council of the base observatory at Fort William in 1890. It may also be regarded, not inaptly, as the period during which the interest of meteorological work passed from the geographical extension of observations over the earth's surface to the exploration of the upper air, begun by Welsh, continued by Glaisher, but afterwards allowed to drop. The great enterprise of maintaining a station of the first order at the highest point of the British Isles absorbed practically all the energy of the Scottish society during Buchan's membership of the Meteorological Council. Ultimately it proved to be a greater charge than the society could support, and appeal was made first to the council, who were themselves experiencing the pinch of straitened circumstances, and then to the Government, who after a lengthy inquiry by means of a committee arrived at a misunderstanding; and the closing of the observatories was the result.

Indeed, the course of the negotiations began, as it ended, in a misunderstanding. The financial posi-

tion of the office was well known; but at the time the National Physical Laboratory was in course of formation, and it was supposed that, being itself in receipt of Parliamentary aid, it would maintain its physical observatory at Kew out of its own resources. The annual sum of 400*l.* voted by the Meteorological Council would thus become free for meteorological enterprise elsewhere. But it was ordered otherwise; the payment to Kew still goes on.

In the course of the appeal some hard things were said of the council in its corporate capacity, but they were not followed by any diminution of mutual respect between its members. The only real difference of opinion was as to the ways and means of enlisting the practical support of Parliament for meteorological work. The motives which actuate the decisions upon such matters are not even now sufficiently clear to obviate legitimate difference of opinion upon the subject.

However one may regret the termination of a great enterprise, it is fair to say that the only possible conditions for its continuance were a sufficient supply of funds. All are agreed that a precarious existence under financial conditions involving semistarvation of the work of research could not be regarded as an alternative.

Buchan was an honorary LL.D. of Glasgow, and a Fellow of the Royal Societies of London and Edinburgh. He was curator of the library and museum of the latter, and received the Makdougall-Brisbane prize from the society in 1876, and the Gunning prize in 1893. He was the first recipient of the Symons medal of the Royal Meteorological Society of London in 1902. He served for some time on the committee of the Government grant for scientific research. He was president of the Botanical Society of Edinburgh in 1870-1. He was also an honorary member of the Royal Society of Sciences of Upsala, of the Philosophical societies of Manchester, Glasgow, and Emden, and of the meteorological societies of Austria, Germany, Mauritius, Algiers, &c.

In Edinburgh society, and indeed throughout Scotland, he was a well-known figure. His striking appearance, his geniality, his familiar acquaintance with Scottish literature and literary men, and his enthusiastic devotion to his work, easily account for the high degree of respect and affection with which he was regarded in the Scottish capital. He was at his best at the hospitable gatherings of the Royal Society Club, with the management of which he was associated for many years.

He married in 1864 Sarah, daughter of David Ritchie, of Musselburgh, who died also on May 13 seven years ago. He leaves a son, Dr. A. Hill Buchan, with whom he lived, and who was his companion on many journeys.

In thus taking leave of a kindly master and a valued friend, it is not too much to say that the work of Buchan's life has contributed largely to justify the claim of meteorology to be regarded as a separate scientific subject, entitled to separate academic recognition. The physics of the atmosphere has its geographical aspect, but it is not a branch of geography; it has its mathematical aspect, but it is not a branch of mathematics; it has its experimental aspect, but it is not a branch of experimental physics. The constitutional affection of the throat prevented Buchan from using his natural powers of exposition to their full extent, but may we not hope that the University of Edinburgh will see her way to recognise the devotion of her distinguished alumnus by providing the subject of his devotion with a voice among the sciences which she fosters?

W. N. SHAW.